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MEASUREMENTS OF CHATTANOOGA SCHOOL-CHILDREN.

BY

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In another investigation[1] an account was given of the measurements of Washington school-children taken by me, and also a history of the measurements of school-children in this country and in Europe.

We shall add here a few further measurements of school-children of Chattanooga, Tenn. We regret the number is not larger.

We have given some conclusions especially as indicating a purely experimental stage of investigation. It might be asked, for instance, what relation could there be between color of eyes and weight and strength, etc. We cannot say, but if we had larger numbers, further subdivisions could be made and other factors, that might have influence, excluded until finally the relation, if real, could be determined.

To neglect every relation that *a priori* seems improbable, is not consistent with the history of investigation. For it has happened that some of the most unsuspected relations have turned out through further inquiry to be of great importance.

Chattanooga School-Children.[2]—In this study of the Chattanooga children is recorded one of the first, if not the first, measurement of school-children in the South.

Measurements were taken of weight, height, strength and sensibility to pain. The teachers reported also as to whether the pupil was bright, dull, or average *in general*, and as to the standing of the pupil in particular studies. In order that a fair estimate as to the ability of the pupil might be made, a pupil was marked average, whenever there was any doubt.

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[1] "Experimental Study of Children," Reprint from Report of Commissioner of Education for 1897-98.

[2] Professor William E. Ashcroft and Superintendent Dr. A. T. Barrett kindly made the measurements.

The date of birth, order of birth, and color of hair and eyes, were also noted. The children were divided into blondes, mediums and brunettes. If such characteristics should be related closely to any of the other data, it might in this way be ascertained.

Chattanooga School-Girls. — School-girls in Chattanooga are slightly taller and heavier for most ages than school-girls in Washington. (Tables 1 and 2).

TABLE 1.—WASHINGTON SCHOOL-GIRLS.[1]

No. of Pupils.	Nearest Age.	Av. Height, inches.	Av. Weight, lbs.	No. of Pupils.	Nearest Age.	Av. Height, inches.	Av. Weight, lbs.
754	8	47	49	833	14	60	93
883	9	49	54	655	15	62	100
939	10	51	58	450	16	62	105
931	11	53	64	323	17	63	110
876	12	56	73	151	18	63	111
966	13	58	82				

The summer-born are slightly less in height and strength, and have less sensibility to pain than the winter-born for most ages. (Tables 3 and 4.)

Mentally Considered (Table 5).—The first-born are slightly superior to the second-born. Those born in winter are superior to those born in summer.

There is no special difference between blondes and brunettes.

Chattanooga School-Boys. — The Chattanooga boys are superior in weight and height to the boys in Washington (Tables 6 and 7). This accords with the general impression that Southern men are taller than Northern men.

Those born in summer are very slightly inferior in weight, height and strength, to those born in winter (Tables 8 and 9). This does not agree (as in the case of girls above, Tables 3 and 4) with Combe's results in Switzerland, who found children born in summer to be taller for their age. As the superiority of winter children in Chattanooga is very slight, it may be due either to the relatively small number measured or to difference of climate, it being severer in Switzerland during the winter than in Chattanooga.

Mentally Considered.—The first-born boys are slightly superior mentally to both the second-born and later-born (Table 10). Boas found the first-born to excel the

[1] See "Experimental Study of Children."

later-born in both stature and weight. This coincides with results of most investigations, showing that superiority of body usually goes with superiority of mind. Thus the children of the nonlaboring (professional and mercantile) classes of Washington not only show a higher percentage of mental ability, but are physically superior to those of the laboring classes.

TABLE 2.—CHATTANOOGA SCHOOL-CHILDREN, WHITE GIRLS.

No. of Pupils.	Nearest Age.	Av. Height. inches.	Av. Weight lbs.	Strength of		Sensibility to Pain.	
				r. hand kilogr.	l. hand	r. temp. grams.	l. temp. grams.
10	8	47		11	9		
21	9	50		13	11		
						(5)	(5)
30	10	52		14	13	2540	2830
			(11)			(14)	(14)
30	11	54	70	14	13	2315	2415
			(30)			(31)	(31)
49	12	54	77	18	16	2520	2590
						(26)	(26)
43	13	58	92	20	18	2550	2445
44	14	61	100	21	19	2687	2642
35	15	62	101	23	21	2460	2463
13	16	62	101	23	20	2653	2561

TABLE 3.—SUMMER-BORN.

		ft. in.					
4	8	3 9		10	8		
8	9	4 5		12	12		
						(1)	(1)
13	10	4 4		14	13	2400	8500
			(4)			(4)	(4)
14	11	4 6	71	15	14	2675	2537
			(15)			(14)	(14)
27	12	4 9	73	17	15	2725	2907
26	13	4 11	91	20	18	2633	2561
23	14	5 2	99	21	19	2755	2577
16	15	5 2	99	22	21	2604	2675
8	16	5 2	100	24	20	2368	2275
3	17	5 2	117	20	19	2532	3016

TABLE 4.—WINTER-BORN.

6	8	4 1		12	10		
13	9	4 2		12	11		
15	10	4 5		14	12	2775	2725
			(7)			(9)	(9)
15	11	4 6	69	14	14	2266	2366
22	12	4 9	82	19	17	2351	2329
			(6)			(8)	(8)
17	13	4 11	82	20	18	2362	2193
21	14	5 1	97	21	19	2611	2712
18	15	5 3	105	23	21	2306	2236
5	16	5 3	103	24	20	3110	3020

TABLE 5.—CHATTANOOGA PUBLIC SCHOOLS, GIRLS.

No.		Bright.	Average.	Dull.	No.		Bright.	Average.	Dull.
		%	%	%			%	%	%
89	First-born	28	65	7	135	Winter-born	34	60	6
59	Second-born	28	61	11	124	Blondes	27	62	11
127	Later-born	34	51	15	81	Medium	34	53	13
139	Summer-born	29	55	16	56	Brunettes	30	55	15

TABLE 6.—WASHINGTON BOYS[1] (WHITE).

No. of Pupils.	Nearest Age.	Av. Height, inches.	Av. Weight, lbs.	No. of Pupils.	Nearest Age.	Av. Height, inches.	Av. Weight, lbs.
787	8	48	51	926	13	57	79
878	9	50	56	784	14	59	88
930	10	52	61	528	15	62	101
862	11	53	66	345	16	64	114
986	12	55	73				

TABLE 7.—CHATTANOOGA SCHOOL-CHILDREN, WHITE BOYS.

No. of Pupils.	Nearest Age.	Av. Height, inches.	Av. Weight, lbs.	No. of Pupils.	Nearest Age.	Av. Height, inches.	Av. Weight, lbs.
10	8	49					(11)
17	9	15		47	13	57	89
			(6)	35	14	60	95
28	10	52	69				(12)
39	11	54	77	16	15	63	107
			(8)	12	16	63	115
35	12	57	79				

TABLE 8.—WINTER-BORN.

No. of Pupils.	Nearest Age.	Av. Height ft.	Av. Height in.	Av. Weight lbs.	Strength of r. hand kilogr.	Strength of l. hand	Sensibility to Pain. r. temp. grams.	Sensibility to Pain. l. temp. grams.
5	8	4	1		14	11		
4	9	4	2		14	12		
				(5)			(5)	(5)
15	10	4	5	71	16	13	3090	3080
				(7)			(10)	(10)
25	11	4	6	77	23	19	2783	3072
				(10)				
22	12	4	8	78	21	20	2581	2509
23	13	4	10	92	24	20	2659	2746
18	14	5	1	98	27	25	2443	2511
8	15	5	4	106	28	27	2868	3162
4	16	5	4	105	33	28	2575	2612

[1] See "Experimental Study of Children."

TABLE 9.—SUMMER-BORN.

5	8	4 1		14	13	(1)	(1)
12	9	4 3		14	13	2850	2700
13	10	4 4	16	15		(1) 3350	(1) 2900
13	11	4 6	(6)	19	17	2733	2333
12	12		80	19	17	2566	2894
21	13	4 10	87	21	21	3064	3097
17	14	4 11	92	24	23	2890	2950
8	15	5 2	(5) 103	30	28	3016	3091
8	16	5 3	108	34	33	2512	2415

TABLE 10.—BOYS.

No.		Bright.	Average.	Dull.	No.		Bright.	Average.	Dull.
		%	%	%			%	%	%
65	First-born	33	50	17	124	Winter-born	37	44	19
59	Second-born	35	54	11	93	Blondes	38	53	9
105	Later-born	32	56	12	91	Medium	30	54	16
108	Summer-born	29	56	15	59	Brunettes	30	52	8

Those born in winter are slightly superior mentally to those born in summer (Table 10).

Puberty and Sensibility to Pain.—Both boys and girls (Table 11) are slightly less sensitive to pain after puberty than before. It was found in the study of the Washington children[1] that they were more sensitive to locality and heat on the skin before puberty than after. Thus it seems probable that our senses in general are more acute before than after puberty. This accords with the general conclusion that sensibility to pain decreases with age.[2]

TABLE 11.—PUBERTY AND SENSIBILITY TO PAIN, CHATTANOOGA CHILDREN.

Puberty.	No. of Persons.	Sensibility to Pain.	
		Right Temp. Muscle. Pressure, grams.	Left Temp. Muscle. Pressure, grams.
Boys:—Before puberty	26	2820	2837
After puberty	105	2852	2881
Girls:—Before puberty	50	2480	2584
After puberty	117	2589	2543

[1] "Experimental Study of Children," page 1007.
[2] "Experimental Study of Children," page 1113.

TABLE 12.—COLORED BOYS, CHATTANOOGA.

No.		Bright.	Average.	Dull.	No;		Bright.	Average.	Dull.
		%	%	%			%	%	%
131	First-born	41	40	19	27	Black skin	33	48	19
69	Second-born	37	38	25	56	Brown skin	33	48	19
123	Later-born	37	56	7	156	Light brown skin	36	44	20
66	Summer-born	42	31	27	174	Yellow skin	33	46	21
193	Winter-born	34	45	21					

TABLE 13.—COLORED GIRLS, CHATTANOOGA.

127	First-born	33	51	16	45	Black Skin	40	44	16
88	Second-born	39	44	14	87	Brown Skin	41	45	14
199	Later-born	33	50	17	207	Dark Brown Skin	33	46	21
62	Summer-born	30	45	25	220	Yellow skin	35	54	11
239	Winter-born	31	53	16					

Colored Boys.—The first-born are slightly superior mentally to both the second and later-born (Table 12). There appears to be no relation between different degrees of color of skin and mental ability among the boys.

Colored Girls.—The second-born colored girls show a slightly greater mental ability than both the first-born and later-born (Table 13).

The summer-born show a slight superiority mentally to the winter-born (Table 13).

Those with light skin (light brown and yellow) show the lowest percentage of mental ability (Table 13). This is not what we would expect from general impressions. But general impressions are sometimes based on conspicuous exceptions.

The temple algometer used in the pain experiments was designed by me and consists of a brass cylinder with a steel rod running through one of the ends of the cylinder. This rod is attached to a spring, and there is a marker on a scale; this scale is graded from 0 to 4,000 grams. There is at one extremity a brass disc 15 millimeters in diameter; a piece of flannel is glued to its surface, so as to exclude the feeling of the metal when pressed against the skin, thus giving a pure pressure sensation. The whole instrument is 30 centimeters in length. In using this algometer it is held in the right hand near the beginning of the cylinders by the experimenter, who stands back of the subject and presses the disc against the right temporal muscle, and then he

moves in front of the subject, where he can conveniently press the disc against the left temporal muscle.

So soon as the subject feels the pressure to be in the *least disagreeable* the amount of pressure is read by observing the marker on the scale. The subject sometimes hesitates to say just when the pressure becomes in the least disagreeable, but this is part of the experiment. The purpose is to approximate as near as possible the threshold of pain.

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